NOAA/NWS
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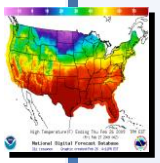
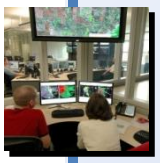
Drought/Low Flow Outlook

National Weather Service

Protecting Lives and Property





Jim Noel

Service Coordination Hydrologist

NOAA/NWS

Ohio River Forecast Center

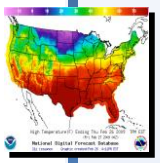
July 23, 2012

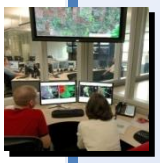
Drought Outlook

- Rainfall Trends
- Current Drought Monitor
- Current Streamflows
- Historical Perspective
- Rainfall and Streamflow Outlooks
- El Nino Watch
- Long-Range Outlooks
- Summary

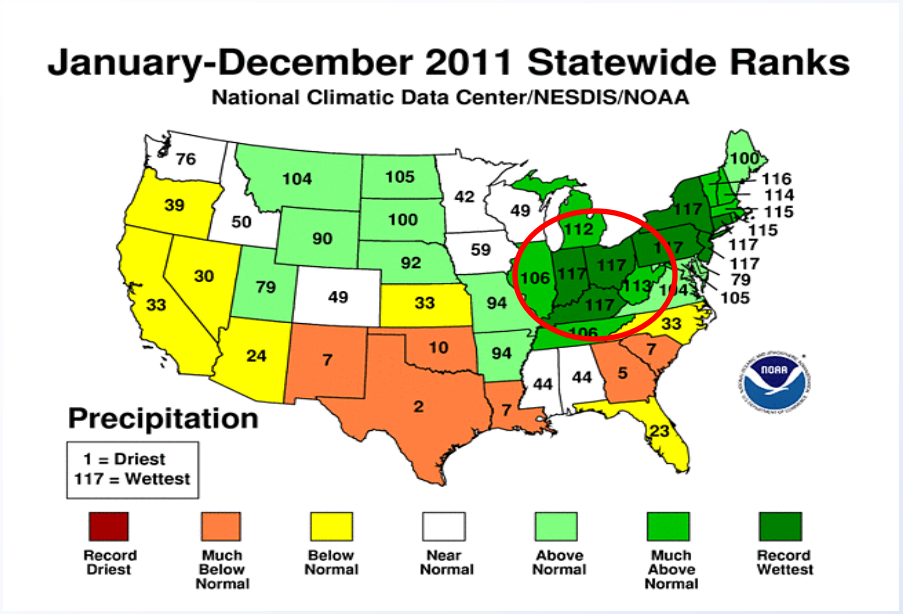
National Weather Service

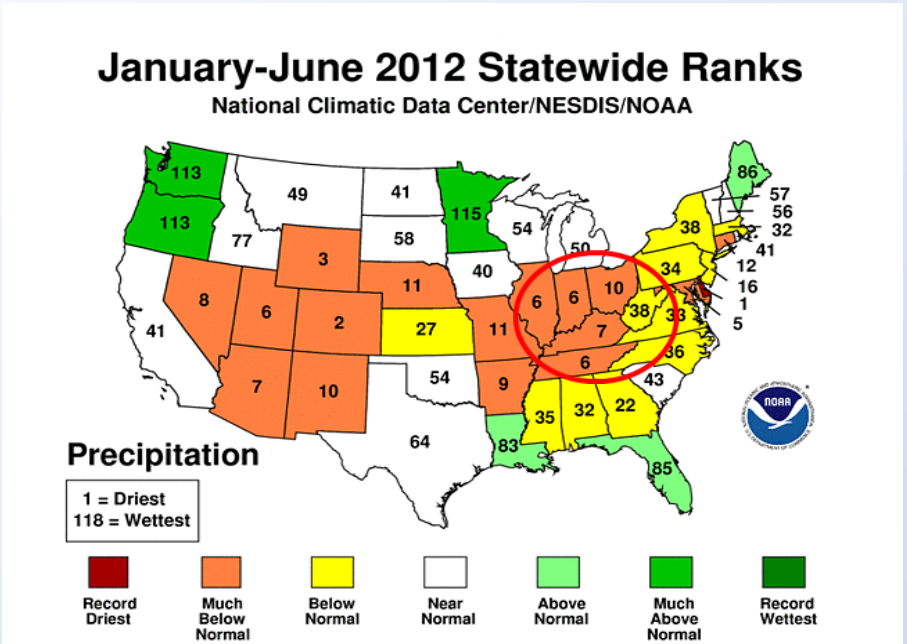
Protecting Lives and Property



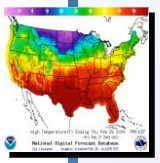


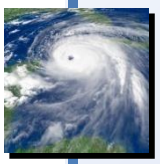
Rainfall Trends 2011 to 2012

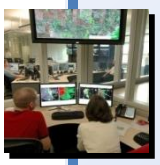




- *2011 was the wettest on record in Indiana, Ohio, Pennsylvania and Kentucky.*
- *A pattern change to drier weather began in winter of 2012*
- *Main drying began in Indiana, Illinois, Kentucky and Tennessee*







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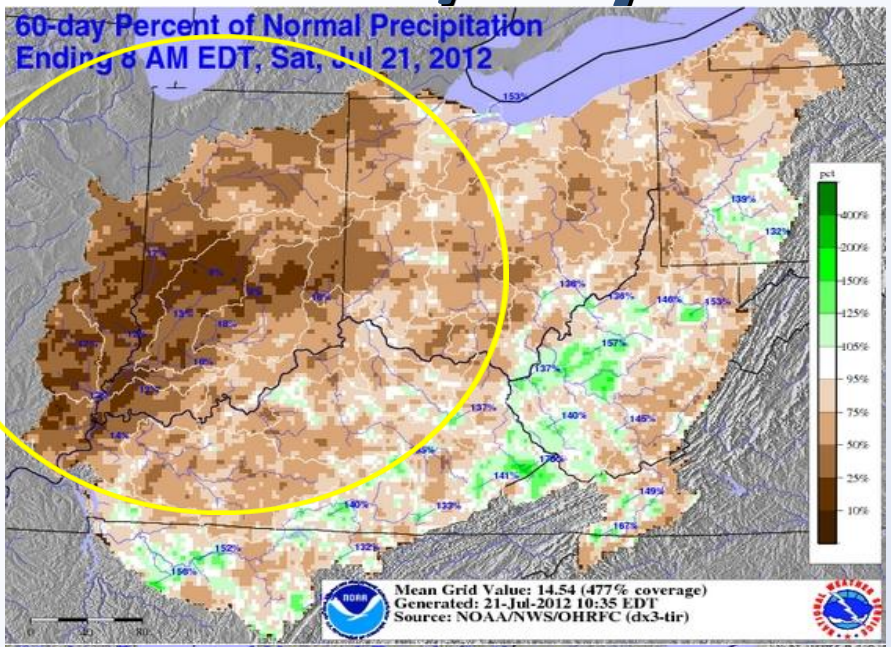
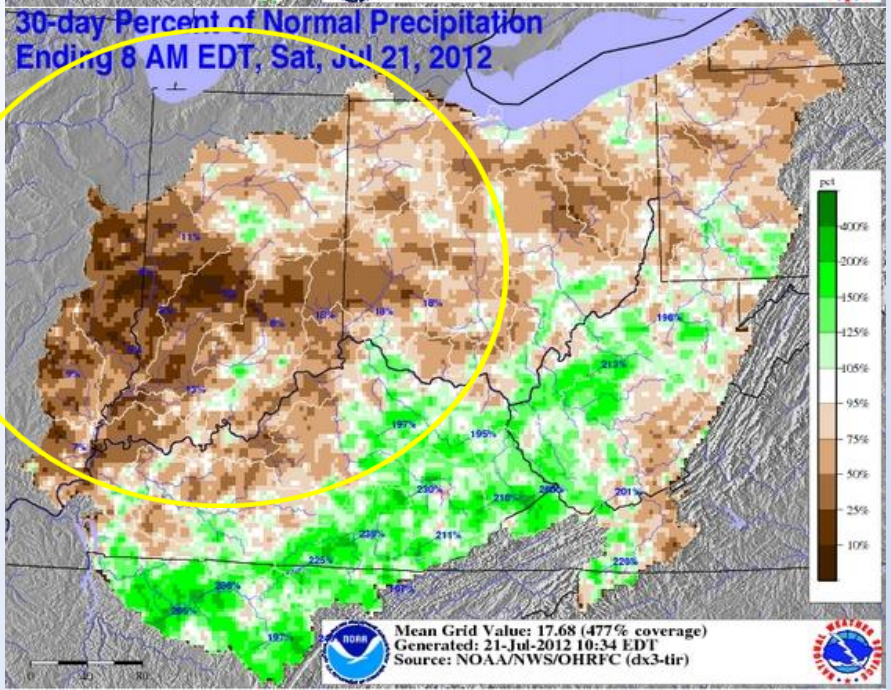
June/July 2012 Rainfall





- *30-60 day rainfall deficits focused on Illinois, Indiana, Ohio and western Kentucky*
- *Some above normal rainfall has developed over Tennessee, eastern Kentucky and West Virginia with 4-10 inches of rain in the last 30 days*

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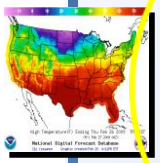
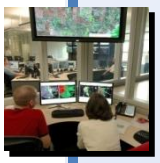
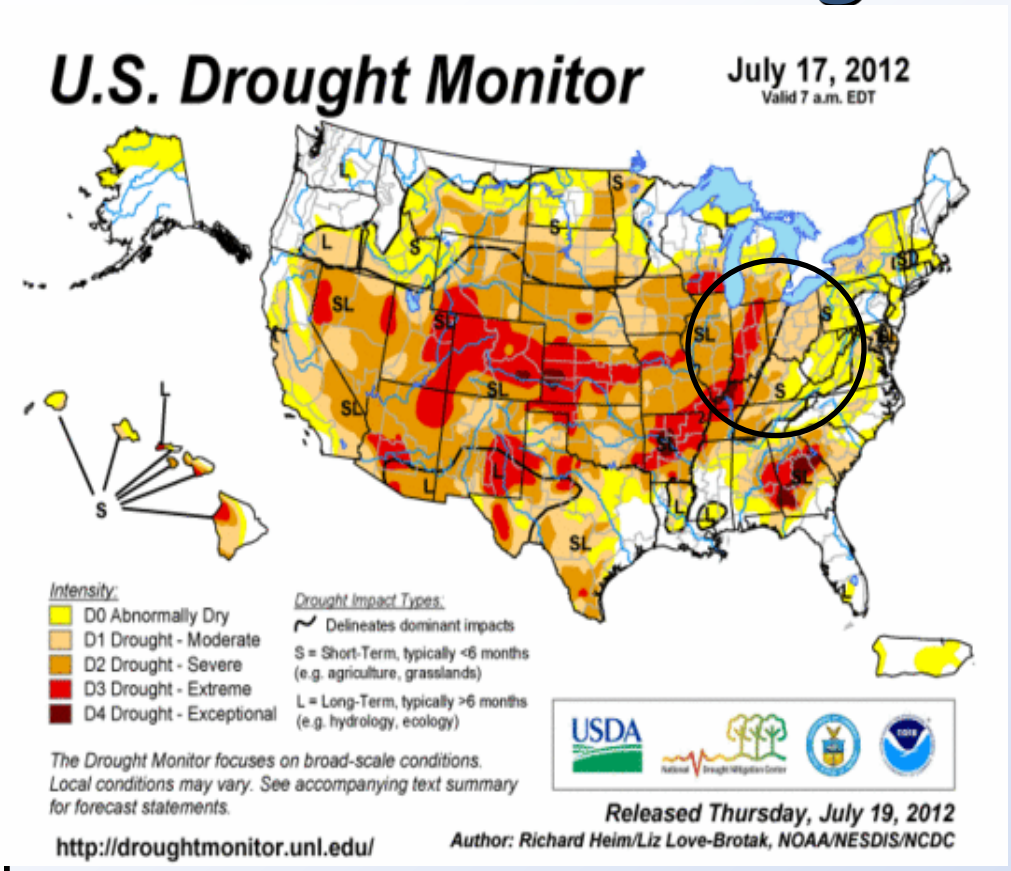
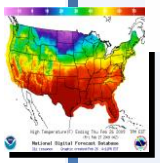


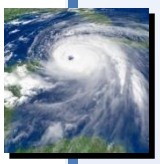


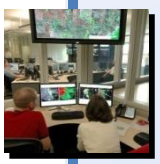
Current Drought Monitor



- *Rapid increase in drought coverage and intensity in northwest Ohio Valley in last 30-days*
- *Main drought area is western Tennessee, western Kentucky, western Ohio, Indiana and Illinois*
- *Some improvement elsewhere*







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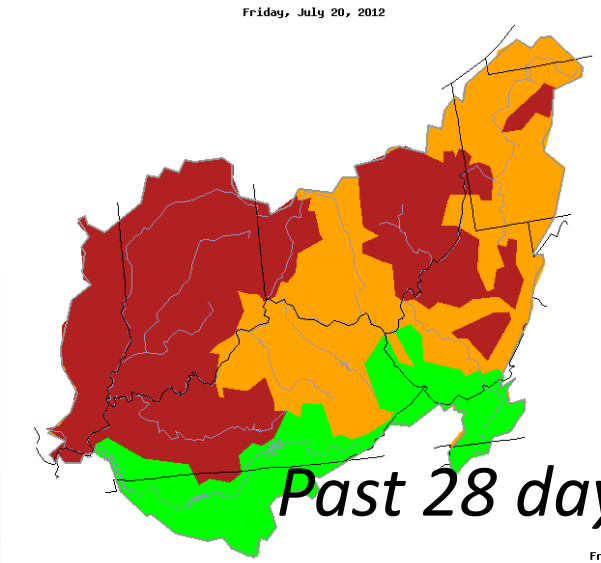
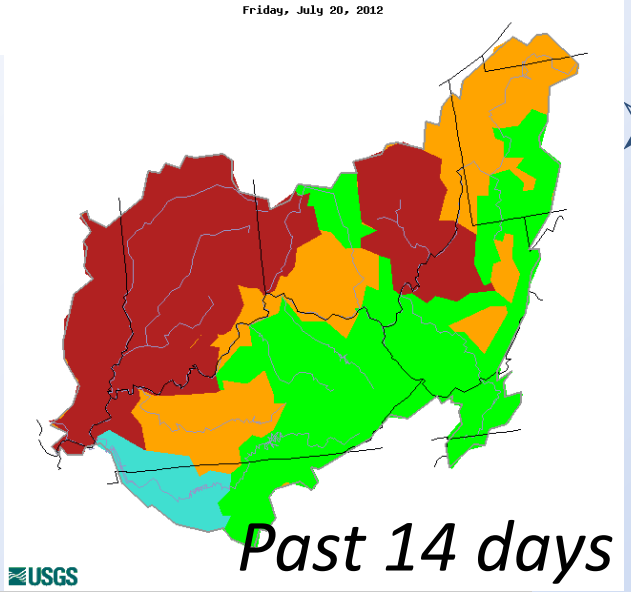
Current Streamflows



Past 28 days



Past 14 days

- *Some improvement has occurred short-term south of the Ohio River including Cumberland River Valley*
- *Conditions worst from lower Ohio Valley into parts of Illinois, Indiana*

Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

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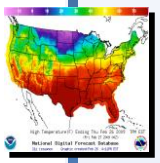
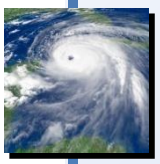
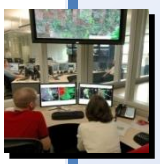
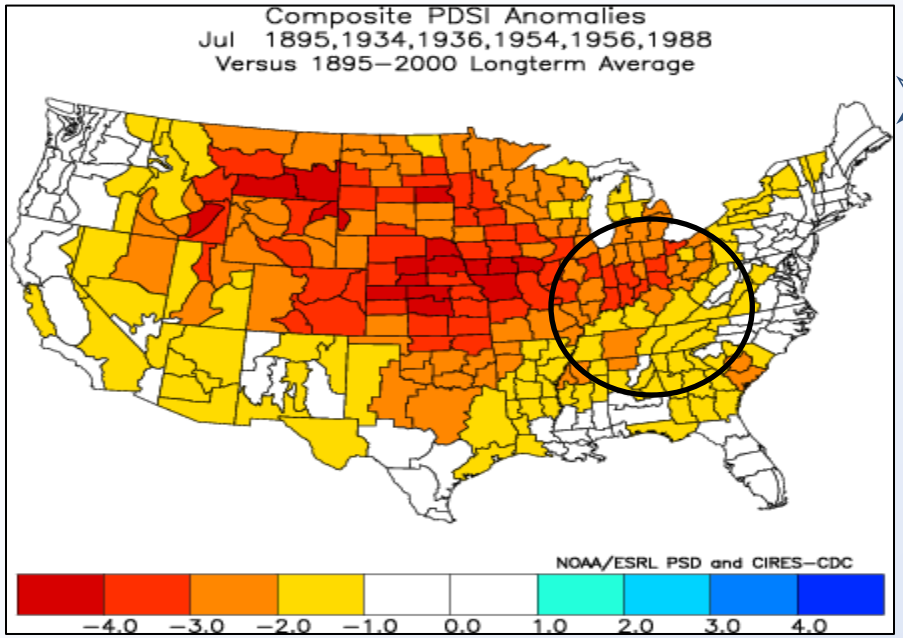
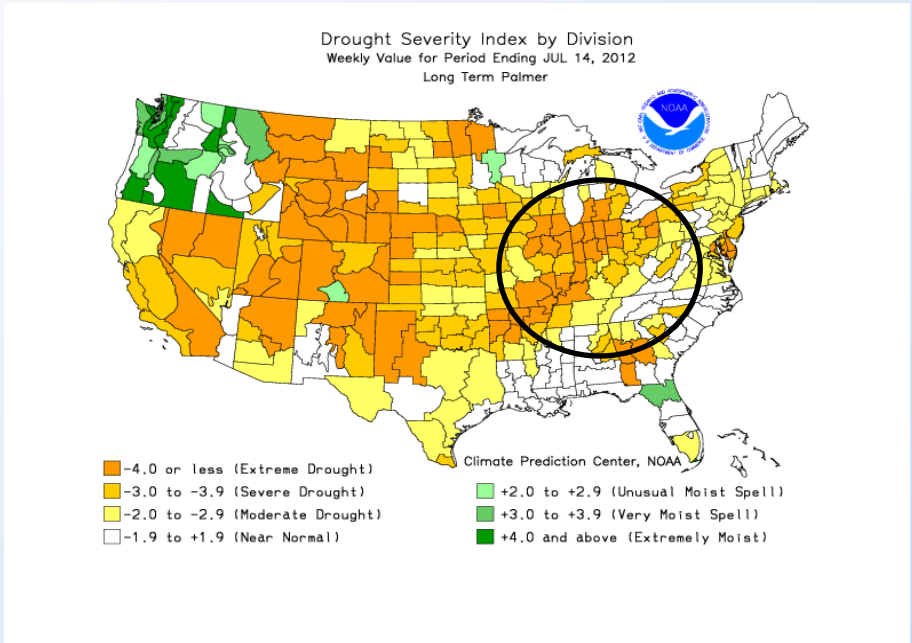






Historical Drought Perspective





- *Average of historical droughts of 1895, 1934, 1936, 1954, 1956 and 1988 (top) is very similar to current drought (bottom) with widespread severe to extreme drought in northern and western Ohio Valley*

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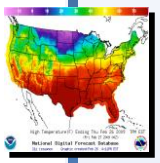
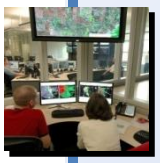
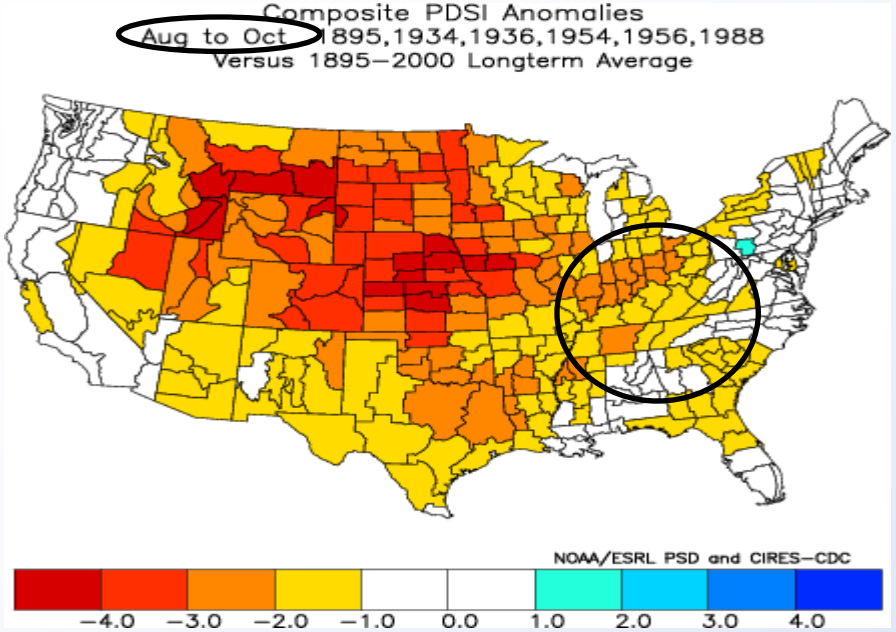
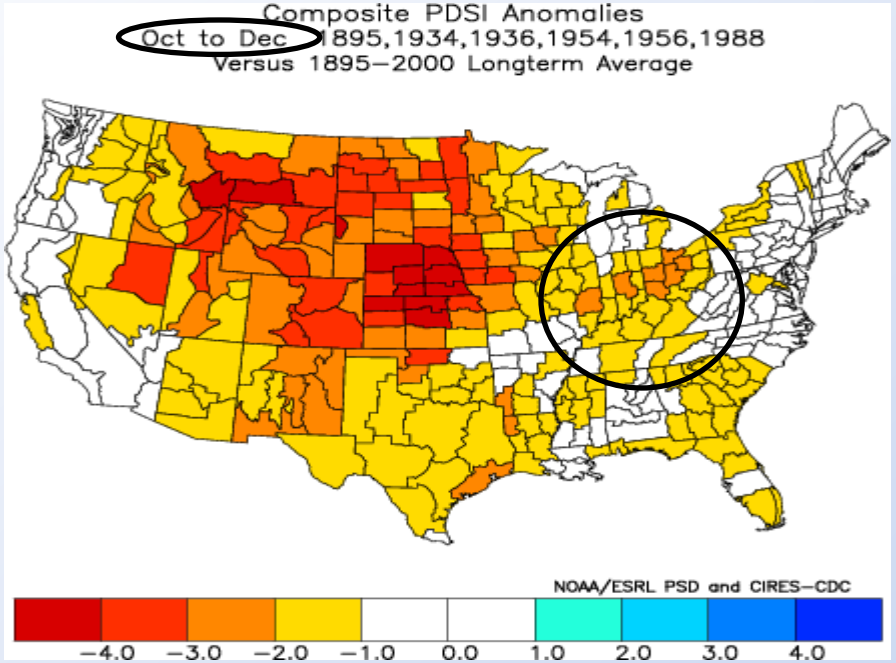




Historical Drought Perspective





- *Historical perspective of some of the worst droughts suggests slow improvement into autumn with best chances for continued drought north of Ohio River*
- *Drought areas would be -2.0 or lower*

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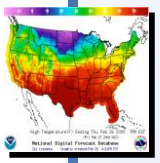
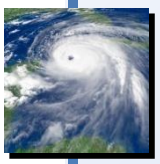
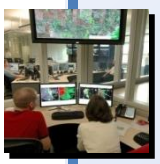
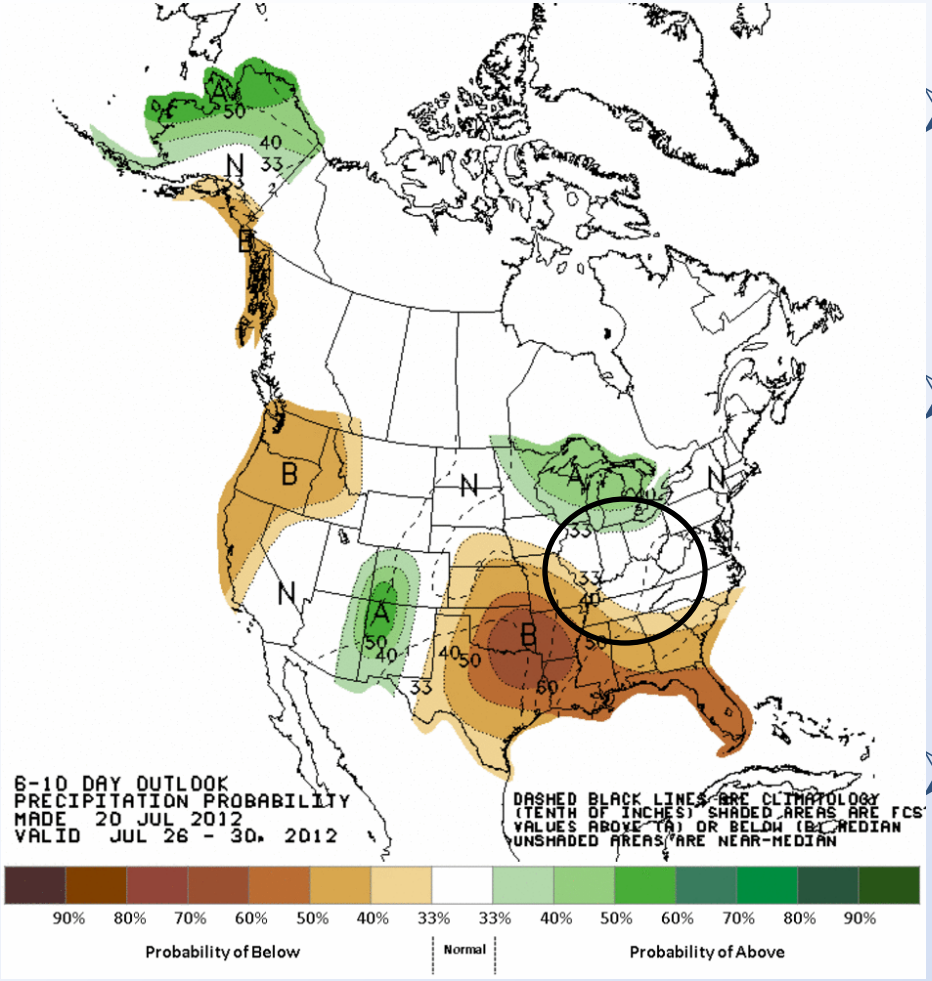


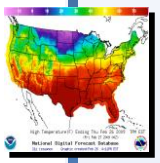


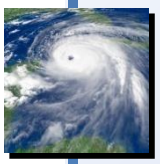


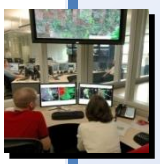
Remainder of July Rainfall Outlook



- *Some relief will continue for the rest of July*
- *Normal to above normal rainfall is forecast north and east*
- *Normal to slightly below normal southwest*







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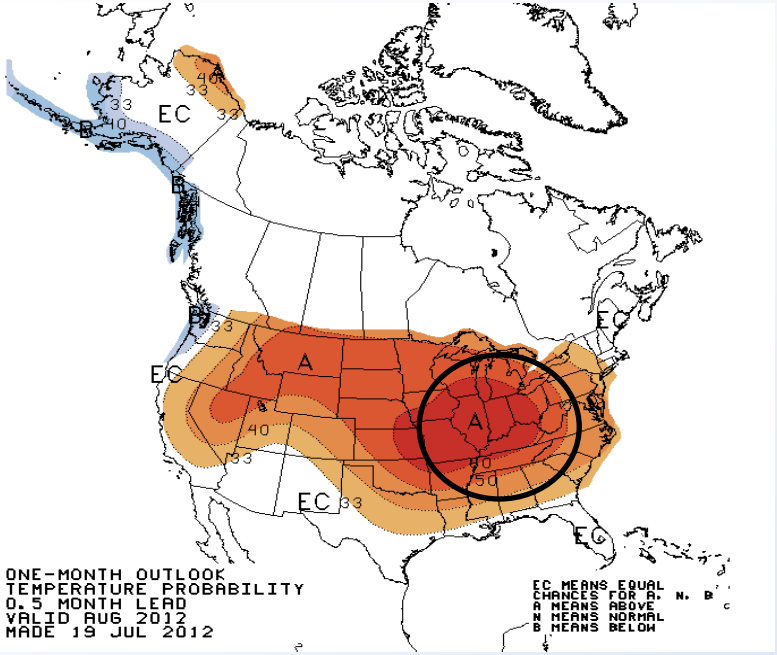
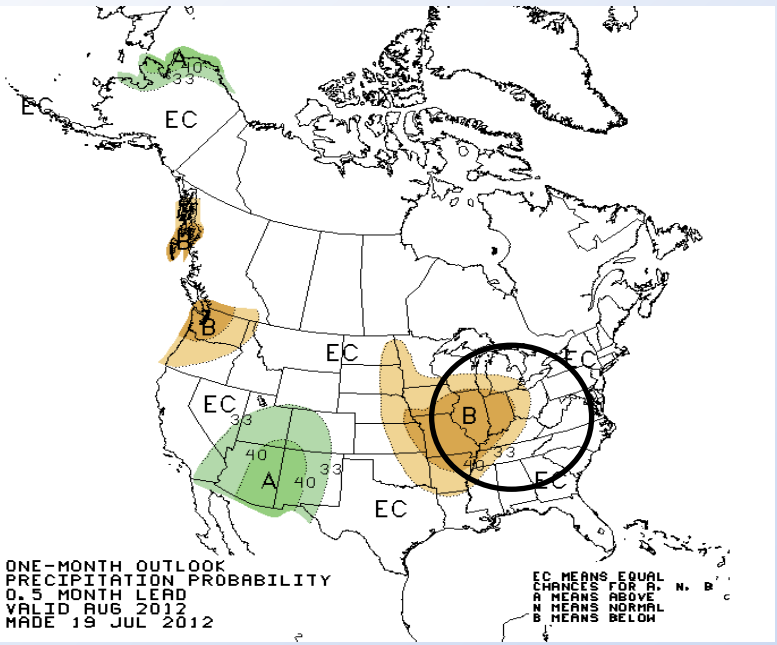
August Outlook





- *Above normal temperatures will persist but it will not be as hot as July*
- *Normal rainfall is expected in the eastern basin with below normal west*

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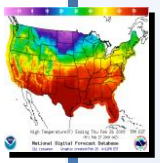
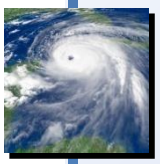
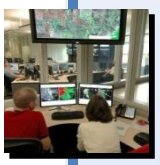
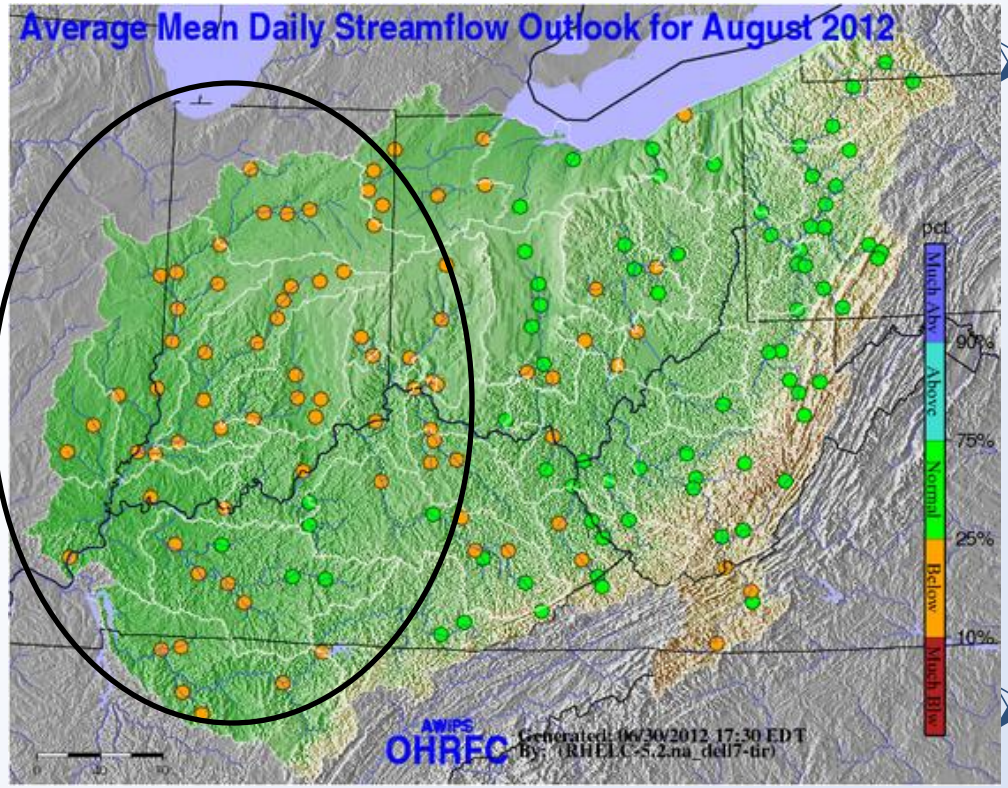






OHRFC August Streamflow Outlook



- *Below normal flows will persist across much of the western half of the Ohio Valley into parts of the Cumberland Valley*
- *Near normal flows are forecast east*
- *Slight improvements are expected*

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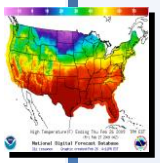
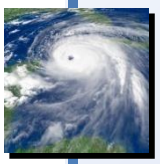
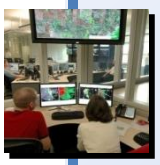
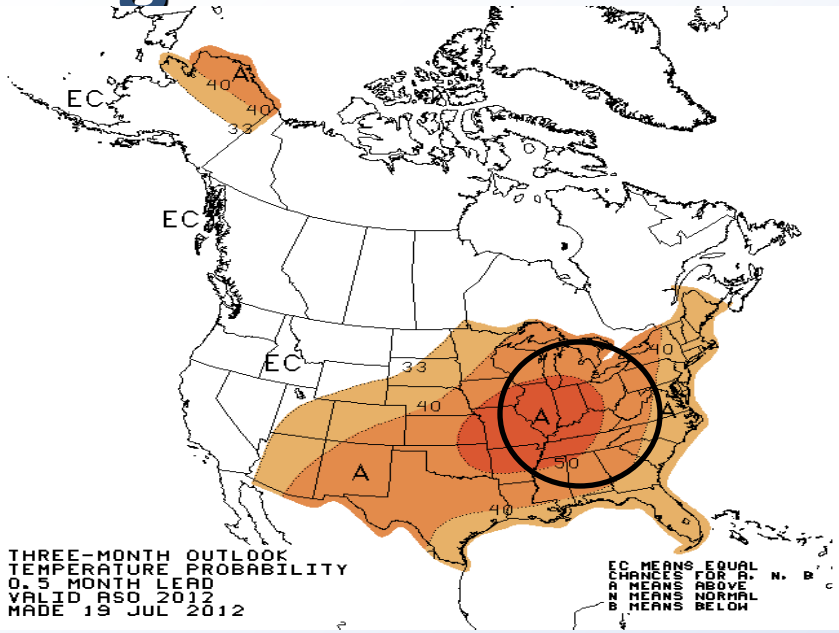
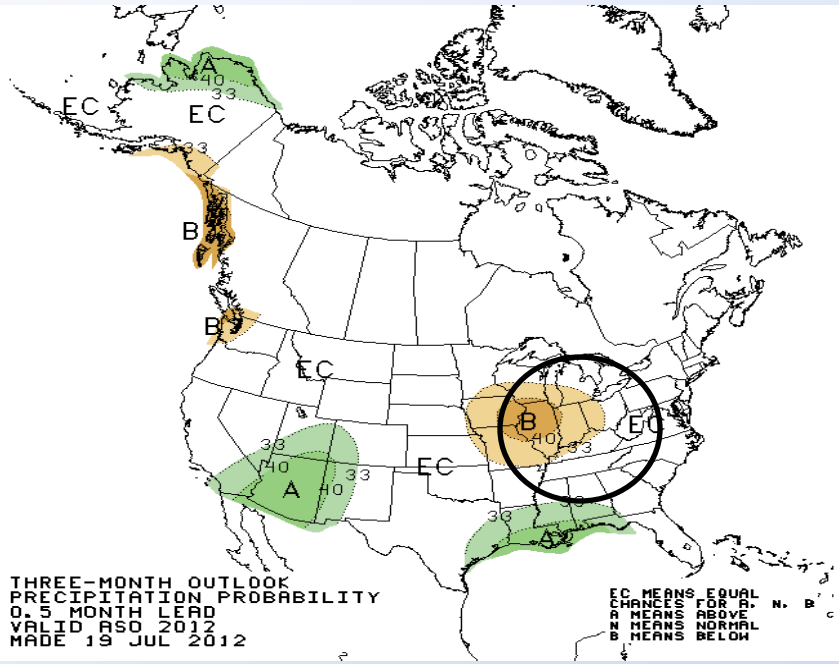






August-October Rainfall Outlook





- *Below normal rainfall will persist in the western Ohio Valley but over a smaller area*
- *Near normal rainfall is forecast east and south which should allow for improvement in the Cumberland basin*

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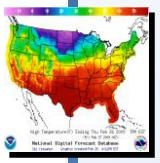
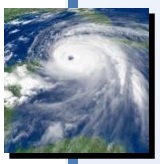
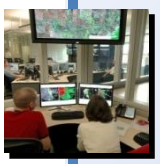
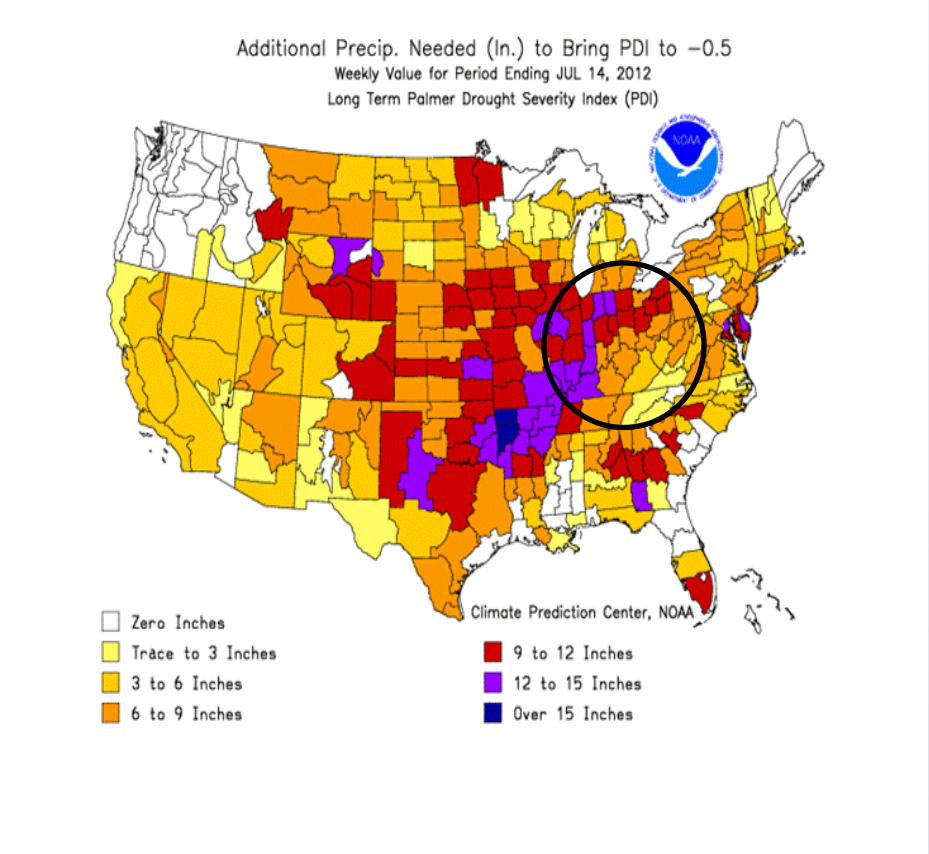






Rainfall Needed to End Drought



- *Less than 6 inches of rain needed in east and southeast Ohio Valley*
- *Up to 9-12 inches needed in western and north sections*
- *Recent rains east of Cleveland to Cincinnati to Louisville to Nashville have helped a little*

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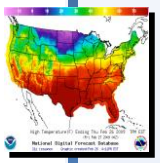
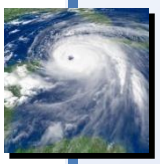
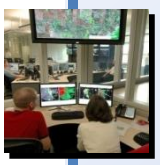
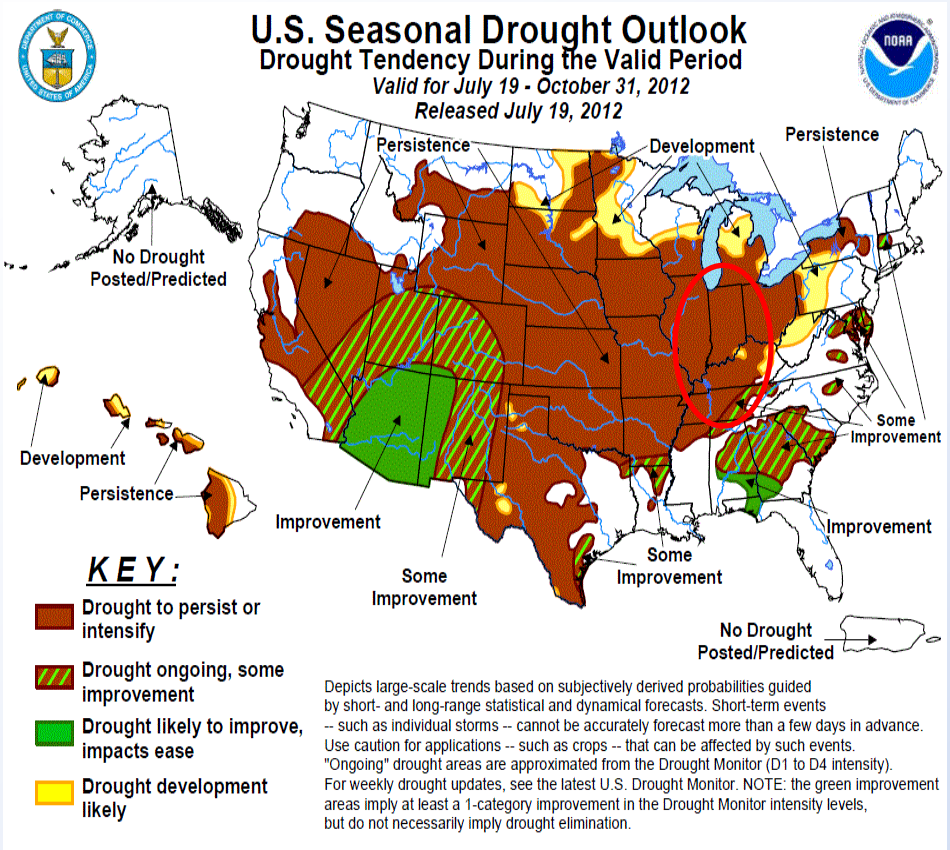






August-October Drought Outlook



- *Drought will persist especially across western half of the region into autumn*
- *There will be some fluctuations from time to time.*
- *There is a chance for some improvement and this will be monitored*

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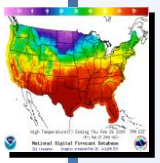
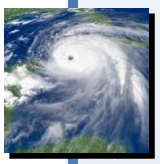
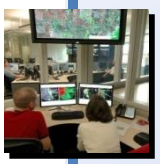
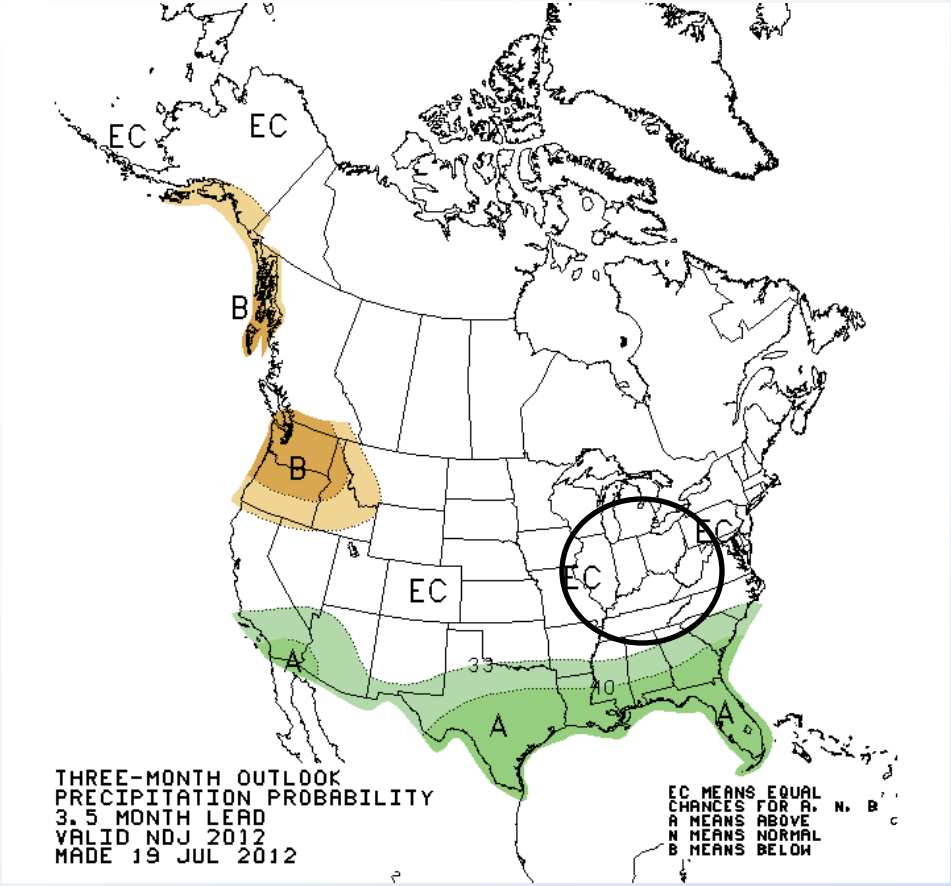






November-January Rainfall Outlook



- *Some rainfall improvement likely in late autumn*
- *Drought will persist in the western basin but will likely weaken.*

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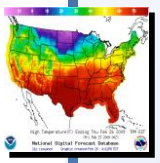

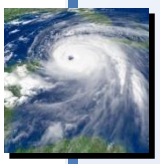

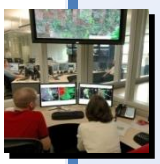

El Nino Watch has been issued

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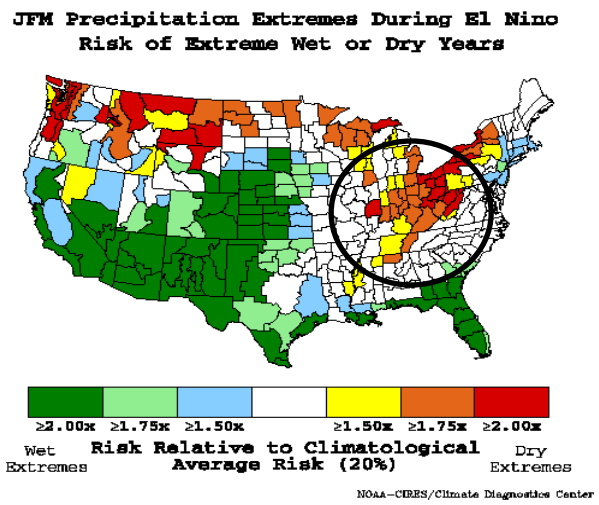
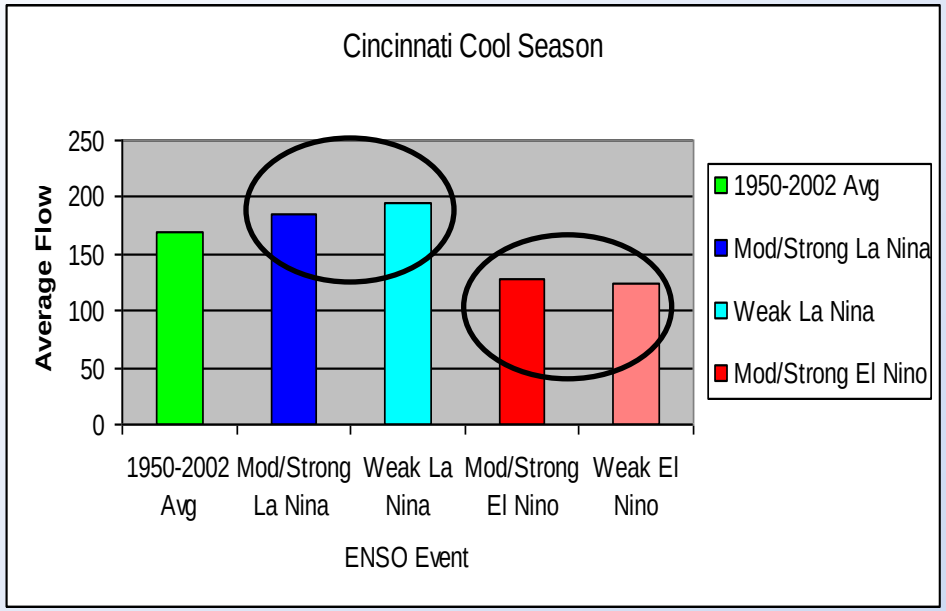
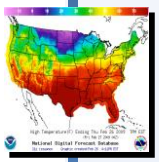
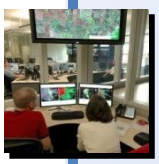


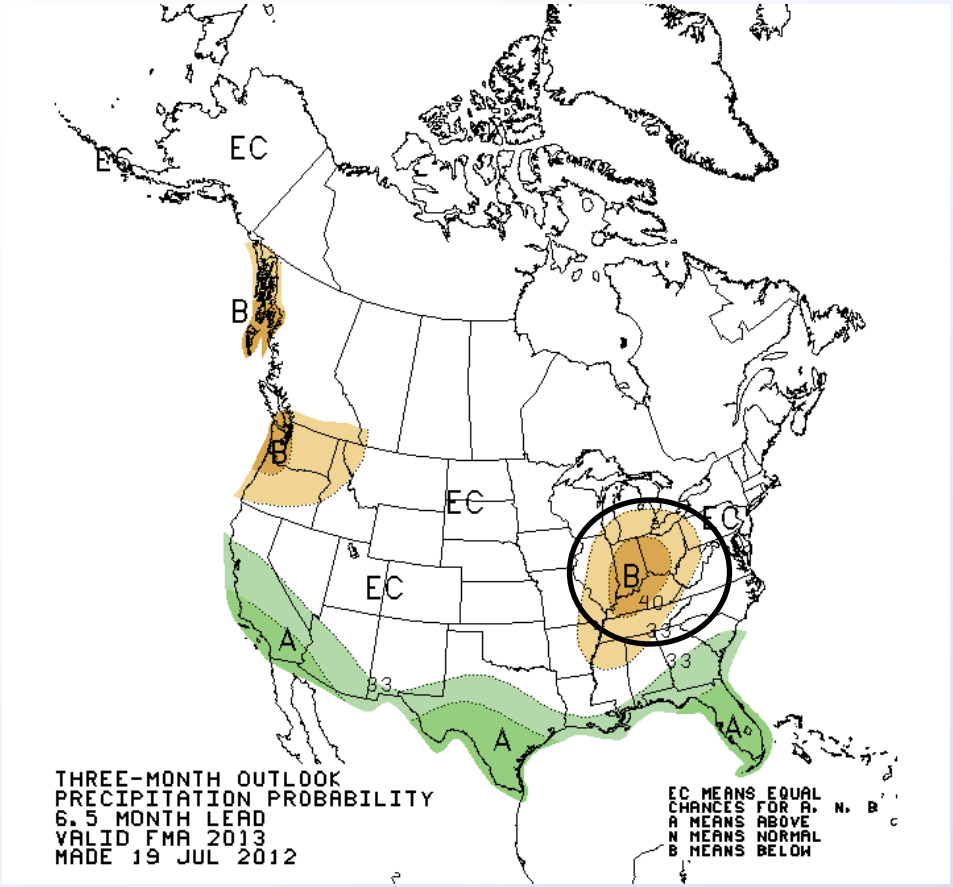


- *El Nino Watch has been issued*
- *NOAA/NWS/OHRFC research says typically Ohio River flows are high in La Nina winter and spring periods like 2011*
- *Typically flows are below normal in El Nino winter and spring periods*





February-April Rainfall Outlook



- *El Nino Watch has been issued by NOAA Climate Prediction Center*
- *The winter precipitation outlook is based on El Nino to develop*
- *This favors below normal precipitation much of the region except far east and southeast*

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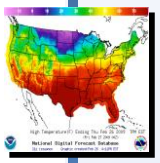

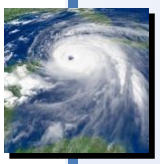

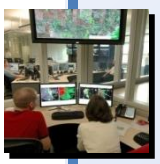

Water Resources Outlooks

- *Subscribe to the Ohio River Forecast Center Water Resources Outlook*
- *Monthly Outlook talking about drought and flood risk*
- ***Subscribe online at: https://public.govdelivery.com/accounts/USNWS/subscriber/new?topic_id=USNWS_1048***

OHRFC Water Resources website: http://www.weather.gov/ohrfc/WRO.shtml

National Weather Service: http://www.weather.gov

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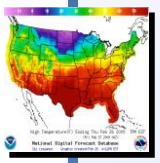

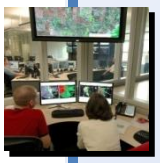

Drought Outlook Summary

- Drought will likely persist especially in western Tennessee, western Kentucky, western Ohio into Indiana and Illinois into early autumn
- The drought appears to have bottomed, however.
- Outlooks and historical data suggest drought to linger but become less severe by autumn
- El Nino Watch has been issued by NOAA.
- This favors a drier than normal winter in the region if El Nino develops. This may prevent drought from ending.

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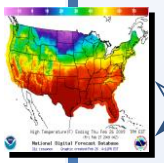

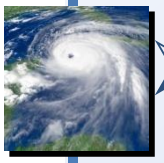

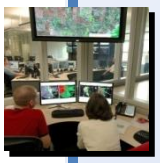

Comments or Questions?

- Send email to James.Noel@noaa.gov at the National Weather Service Ohio River Forecast Center

OR

- You can contact your local National Weather Service Forecast Office

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